



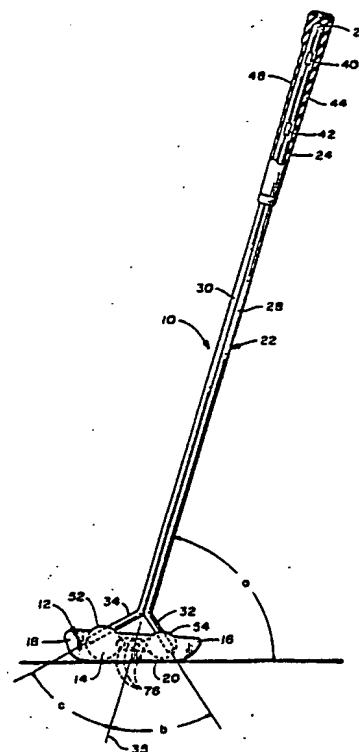
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: **GOLF PUTTER**

(57) Abstract

A golf putter (10, 82, 104, 140 and 180) has a shaft (22, 90, 112, 156, 194) formed by cylindrical tubing which is bent back upon itself to form adjacent coextensive portions (28, 30, 98, 100, 114, 116, 158, 160, 198, 200) which extend from a head (12, 84, 106, 142, 182) to a handgrip (24, 204). In a preferred embodiment, the juncture of the shaft (22) with the head (12) is formed by diverging legs (32, 34) secured to the head adjacent the heel (16) and toe (18) by a weight member (62) having enlarged mass portions (64, 66) and removable weights (76). In a first alternate embodiment, the reversely bent portion of the tubular stock is located within the club head (84), which is formed from opposed sections (86, 88). A second alternate embodiment (104) has shaft legs (118, 120) bent rearwardly to join head (106) at space apart recesses (122, 124) in the rear surface (110) of the club head (106). A third alternate embodiment (140) has shaft legs (162, 165) bent to enter respective recesses (170, 172) located in opposite front and rear faces (143, 144) of head (142). A fourth alternate embodiment (180) has a tubular sheath (202) disposed over the shaft portions (198, 200) which have bent apart leg portions (199, 201) located entirely within the club head (182).



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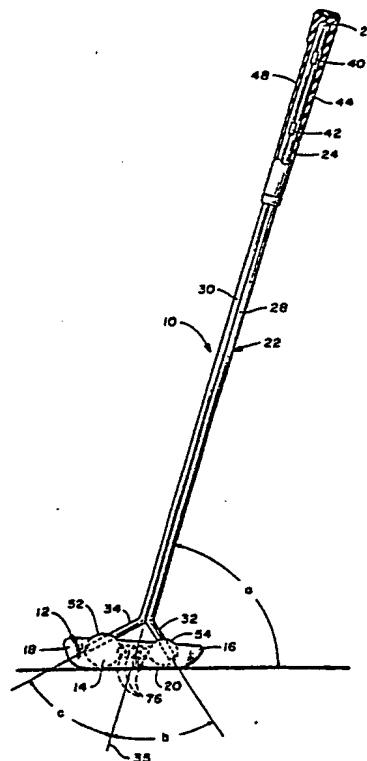
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(54) Title: GOLF PUTTER**(57) Abstract**

A golf putter (10, 82, 104, 140 and 180) has a shaft (22, 90, 112, 156, 194) formed by cylindrical tubing which is bent back upon itself to form adjacent coextensive portions (28, 30, 98, 100, 114, 116, 158, 160, 198, 200) which extend from a head (12, 84, 106, 142, 182) to a handgrip (24, 204). In a preferred embodiment, the juncture of the shaft (22) with the head (12) is formed by diverging legs (32, 34) secured to the head adjacent the heel (16) and toe (18) by a weight member (62) having enlarged mass portions (64, 66) and removable weights (76). In a first alternate embodiment, the reversely bent portion of the tubular stock is located within the club head (84), which is formed from opposed sections (86, 88). A second alternate embodiment (104) has shaft legs (118, 120) bent rearwardly to join head (106) at space apart recesses (122, 124) in the rear surface (110) of the club head (106). A third alternate embodiment (140) has shaft legs (162, 165) bent to enter respective recesses (170, 172) located in opposite front and rear faces (143, 144) of head (142). A fourth alternate embodiment (180) has a tubular sheath (202) disposed over the shaft portions (198, 200) which have bent apart leg portions (199, 201) located entirely within the club head (182).



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GOLF PUTTER

BACKGROUND OF THE INVENTION

5 Field of the Invention

This invention pertains to a golf putter having a continuous tubular shaft formed with a dual shank and opposed leg portions connected to the putter head at spaced apart points to improve handling characteristics and to stabilize the head on striking the ball.

10 Background

In the art of golf putters several inventions have been developed in an effort to improve club handling characteristics and putting accuracy in use. Perhaps no aspect of the game of golf is more important or difficult to master in professional as well as amateur play than putting. In this respect there have been several longstanding problems which have not been overcome with conventional putter designs. For example, the conventional putter is characterized by a single tubular shaft connected to the club head at a single point generally midway between the heel and toe. This arrangement requires that the ball be struck in such a way that the centerline of the shaft intersects the line of movement of the ball in order to reduce the tendency for the club to rotate about the axis of the shaft upon striking the ball. In this regard, the desired zone of contact of the club head with the ball is, of course, relatively small.

25 Various putter designs have been devised in order to overcome the aforementioned problem among others, and various putting techniques have been tried by the legions of golfers.



However, there remains the problem of improving the desired zone of contact so that the accuracy required of even the most skilled professional is mitigated.

Moreover, the art of putting is also subject to variations in greens conditions which require that the golfer develop a strong skill level with regard to applying the correct stroke direction and the force with which the ball must be struck. People who develop a certain skill level in the game of golf usually have a particular feel for the force required to strike the ball with a putter for various angles and distances required to sink the putt. However, the hardness of the green surface, the height of the grass, and weather conditions can influence the trajectory and momentum imparted to the ball. In this regard, it is also desirable to be able to add or subtract mass with respect to the club head to compensate for various playing conditions. Although golf clubs have been developed which are adapted for adding or subtracting weight to the club head the locations of such weights on the head are not particularly advantageous and may adversely affect the tendency for the club to deflect upon striking the ball, hence all the more reason to increase the acceptable zone of contact on the head.

The problems associated with putter accuracy and required stroke force to impart a desired momentum and trajectory to the ball have been substantially improved with the golf putter of the present invention.

SUMMARY OF THE INVENTION

The present invention provides an improved golf putter having a head connected to a handgrip by an elongated tubular shaft which includes spaced apart leg portions at its juncture with the head to form a connection between the shaft and the head which reduces the tendency of the head to deflect or rotate upon striking the ball.

In accordance with one aspect of the present invention there is provided a golf putter having an enlarged preferred zone of contact on the club face which will impart momentum to the ball in the desired direction to reduce misdirected hits.

In accordance with another aspect of the present invention there is provided a golf putter having a shaft comprising a continuous piece of tubing or rod which is formed to have two legs which are attached to the putter head at spaced apart points to increase the stability of the head when striking a golf ball. The



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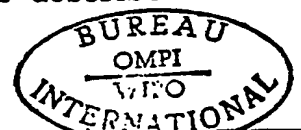
continuous shaft may be formed of tubular alloy steel or other suitable engineering material such as composite reinforced plastic materials and the like.

5 In accordance with another aspect of the present invention there is provided a putter having a continuous one-piece shaft which is formed from an elongated tube or rod which is bent substantially back on itself to form a handgrip portion and to form opposed leg portions which are bent or otherwise formed to a preferred angle and attached to a putter head in such a way as to
10 improve club stability and putting accuracy.

In accordance with still a further aspect of the present invention there is provided a golf club having a unique head and shaft configuration which provides improved means of attachment of the shaft to the head by a removable insert which is also configured
15 to add additional mass to the club head at desired points to improve club handling characteristics and enlarge a preferred zone of contact on the head with respect to the ball. The present invention also provides for a golf club having an improved shaft connection to the club head wherein removable weights may be added to or removed
20 from the head and are located on the head in a preferred area between the juncture of two opposed shaft legs with the head.

The present invention further provides a golf putter which advantageously includes several features which improve the ability of the golfer to use the putter with greater accuracy than
25 prior art putters. The stability of the club is greatly enhanced by a shaft which is joined to the club head at spaced apart points by integral leg portions of the shaft. Club head mass is concentrated in an area generally between the juncture of the shaft legs and the head to further increase club stability and enhance control over momentum
30 imparted to the ball. A handgrip portion of the shaft is provided with a generally planar area which provides a thumb rest and enhances the proper gripping of the club by the user. All of the foregoing features collectively produce a synergistic effect which provides a putter which is more accurate in use and increases the
35 prospects of at least two putting most greens. Moreover, the improved golf putter of the present invention is easily and economically fabricated.

Those skilled in the art of golf clubs in general, and putters in particular, will further appreciate the advantages described



herein as well as other superior aspects of the invention upon reading the detailed description which follows in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 is a side elevation of an improved golf putter in accordance with the present invention;

Figure 2 is a front elevation of the embodiment of the putter shown in Figure 1 on a larger scale;

10 Figure 3 is an exploded perspective view of the head of the putter illustrated in Figures 1 and 2;

Figure 4 is a perspective view of one alternate embodiment of a golf putter in accordance with the present invention;

Figure 5 is a side elevation of a second alternate embodiment of a golf putter in accordance with the present invention;

15 Figure 6 is a front elevation of the putter shown in Figure 5;

Figure 7 is a side elevation of a golf putter in accordance with a third alternate embodiment of the present invention;

20 Figure 8 is a front elevation of the embodiment shown in Figure 7; and

Figure 9 is a perspective view of a fourth alternate embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

25 In the description which follows, like parts are marked throughout the specification and drawings with the same reference numerals, respectively. The drawings are not necessarily to scale and certain features of the invention may be shown exaggerated in scale in the interest of clarity and conciseness.

30 Referring to Figures 1 and 2, there is shown an improved golf putter in accordance with the present invention and generally designated by the numeral 10. The putter 10 includes a head 12 having a ball contacting face 14, a heel portion 16, a toe portion 18 and a generally flat bottom surface 20. The head 12 is connected to
35 an elongated shaft 22 which includes at its upper end a handgrip 24. The shaft 22 is of a unique configuration comprising a continuous length of tubular or solid cylindrical rod of metal or reinforced composite material which is bent double at the distal end 26 to form a shank comprising opposed substantially straight shaft portions 28 and

30, which preferably lie contiguous with each other and in a plane extending substantially perpendicular to the path of swinging of the club. The lower ends of the shaft portions 28 and 30 are bent to form diverging legs 32 and 34, respectively, which are connected to the head 12 at spaced apart points to define generally therebetween a preferred zone of contact on the club face 14. The legs 32 and 34 are connected to the head at the opposed heel and toe areas of the head, respectively. The longitudinal centerline 35 of the shaft 22 passes through the head at approximately the midpoint between the heel 16 and toe 18 and, in the embodiment illustrated in Figures 1 and 2, also passes through the lateral center of the head between the face 14 and the backside surface 15 opposite the face. The centerline 35 is substantially perpendicular to the plane of the surface 20 from the perspective of Figure 2, but forms an angle a in the range of 70° to 85° in the plane of Figure 1. The respective angles b and c formed between the longitudinal centerlines of the legs 32 and 34 with respect to the centerline 35 are in the range of approximately 50° to 65° and 25° to 40°, respectively. The face 14 has a pitch angle p, Figure 2, of approximately 3° with respect to the plane of the surface 20, although the club face 14 may be formed with greater or lesser pitch as desired.

By forming the shaft 22 to have the diverging leg portions 32 and 34, a relatively large zone of contact or "sweet spot" is provided on the club face 14 for striking the ball. The juncture of the legs 32 and 34 with the head 12 at points remote from the centerline 35 reduces the tendency of the club to deflect or rotate about the centerline 35 in response to hitting the ball slightly off center with respect to the longitudinal face of the club between the heel 16 and toe 18. In this regard, the accuracy and criticality of alignment of the ball with respect to the club is reduced and the accuracy of the club is enhanced thereby providing for the direction of movement of the ball to be more in accord with the user's wishes. Moreover, the provision of two separate shaft portions extending from the handgrip to the club head and preferably arranged with respect to each other in a plane extending generally perpendicular to the direction of swinging of the club provides a club which is superior to prior art clubs having double shafts or single shafts with bifurcated leg portions at their lower ends. The abovementioned arrangement of double shafts for the club of the instant invention gives the user a

greater feeling of club stability in use. The abovementioned desirable characteristics are further enhanced by the placement of head weights which will be described in further detail herein.

5 The continuous tubular shaft 22, which forms a single shaft with bifurcated leg portions to provide for connection of the shaft to the club head, is believed to be particularly advantageous in the art of manufacture of golf clubs. The shaft 22 is preferably formed of a single continuous piece of stainless or alloy steel tube having a nominal diameter of .187 to .250 inches. The shaft 22 may also be
10 formed of reinforced composite plastic material such as filament wound reinforced plastic impregnated with carbon or glass filaments. The shaft 22 may also be formed as a solid rodlike member.

In the embodiment illustrated in Figures 1 and 2, the shaft 22, as previously mentioned, is bent approximately 180° upon itself at
15 26 using conventional metal bending techniques. The rigidity of the shaft portions 28 and 30 may be enhanced by securing the shaft portions at spaced apart points 40 and 42, for example, by welding or other suitable joining techniques.

The improved handgrip 24 includes a molded elastomeric
20 sleevelike core member 44 which is slipped over the upper end of the shaft and secured thereto by a suitable adhesive or the like. The core 44 is preferably covered by a tubular cover 46 formed of a suitable fabric. The core 44 may also be formed integral with the grip cover 46. The cover 46 is retained on the core 44 with the
25 assistance of a tubular sleeve 47 and an end cap 49. The handgrip 24 is desirably provided with a generally planar surface 48 along the front side of the handgrip and lying in a plane which intersects the plane of the surface 20 along a line which would be perpendicular to the centerline 35, viewing Figure 2. The surface 48 is provided for
30 proper alignment of the user's thumbs in tandem on the surface 48 and extending toward the head 12 and parallel to the centerline 35. The overall combination of the handgrip 24 with the thumb resting surface 48, the continuous shaft 22 with the leg portions 32 and 34, and the configuration of the club head 12 provide an improved putter
35 which provides putting accuracy and club stability heretofore unrealizable in the art.

Referring now to Figure 3, in particular, a preferred construction of the head 12 is illustrated in an exploded perspective view. The head 12 is formed with spaced apart bosses 52 and 54

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disposed across the top surface of the head opposite the surface 20. The bosses 52 and 54 are provided with semicylindrical recesses 56 and 58, respectively, for receiving the ends of the legs 34 and 32. The recesses 56 and 58 also open into an enlarged recess 60 for receiving a removable weight member 62. The member 62 is characterized by opposed generally cylindrical portions 64 and 66 connected by an integral center web portion 68. The cylindrical portions 64 and 66 are also provided with cooperating semicylindrical recesses 65 and 67 which are adapted to be in alignment with the recesses 56 and 58, respectively, when the removable weight member 62 is disposed in the recess 60. The weight member 62 is secured in assembly with the head 12 by suitable threaded fasteners such as socket head screws 70. Accordingly, the shaft 22 may be secured to the head 12 by inserting the leg portions 32 and 34 in the respective recesses 58 and 56 and clamping the legs to the head portion with the weight member 62.

The weight member 62 is also provided with three cylindrical bores 74 arranged side-by-side between the weight portions 64 and 66 and adapted to receive removable weights 76. The weights 76 are retained in the head 12 by a removable cover plate 78 which is adapted to be secured to the weight member 62 by flat head socket recess type screws 80. The head 12 is preferably made of a suitable relatively dense metal such as aluminum bronze and the weight member 62 may also be made of a suitable dense material such as brass or aluminum bronze. The weights 76 may be of a material such as that used for the head member 12 and the weight member 62, or the weights 76 may also be made of lead or other relatively dense material. By arranging for the removable weight members 76 to be added to or removed from the head 12 between the points of connection of the head to the shaft 22, the addition or subtraction of these weights does not effect the tendency for the club to deflect upon hitting a ball slightly off center of the preferred contact zone. The weights primarily affect the momentum given to the ball for a given swing force of the club so that the golfer may compensate for greens conditions during any given round at any particular time. In this latter regard, the weights may be easily added to or removed from the head by removal of the cover plate 78.

Referring now to Figure 4, an alternate embodiment of a golf putter in accordance with the present invention is shown and



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generally designated by the numeral 82. The putter 82 includes a head 84 having substantially the same longitudinal profile as the head 12 but being formed of two opposed sections 86 and 88 which are suitably joined along a central longitudinal plane. The putter 82 also includes an elongated shaft 90 formed from a continuous length of steel tubing or the like which is bent to form opposed leg portions 92 and 94 which are integral with a connecting web portion 96. The legs 92 and 94 are also integral with longitudinal shaft portions 98 and 100 which extend upward to opposed distal ends 93 and 95. The shaft portions 98 and 100 may be secured to each other at spaced apart points, not shown, by spot welding or the like and the distal ends of the shaft portions may be covered by a handgrip, not shown, such as the grip 24. The opposed head sections 86 and 88 are provided with suitable recesses having the configuration of the shaft formed by the legs 92, 94 and the interconnecting web 96 whereby the head may be secured to the shaft by clamping the head sections 86 and 88 to each other with the shaft disposed therein. The head 84 may be provided with a sighting groove 85 for use in lining up a putt and aligning the club with a desired line of motion of the putter on striking the ball. The putter 82 may be characterized as a bidirectional model wherein the head has opposed striking faces 89 and 91 on the respective head sections 86 and 88. The head sections 86 and 88 may also be provided with suitable bosses 83 and 87 to concentrate weight of the head at points spaced apart from the longitudinal center of the head and in the vicinity of the juncture of the legs 92 and 94 with the head.

Referring now to Figures 5 and 6, another embodiment of a golf putter in accordance with the present invention is illustrated and generally designated by the numeral 104. The putter 104 is characterized by a head member 106 including a heel 107, a toe 109 and a planar bottom surface 111. The head 106 also includes a ball striking face 108 and a back face 110. The head 106 has a longitudinal side profile generally similar to the heads 12 and 84 and is formed of one piece. The putter 104 also includes a shaft 112 formed from a continuous length of tubing bent at its upper distal end 113 in the same manner as the arrangement of the shaft 22 to form opposed shaft portions 114 and 116 which include integral diverging legs 118 and 120. The legs 118 and 120 are also bent with respect to the plane of the aligned shaft portions 114 and 116 so that



the distal ends of the legs may enter respective recesses 122 and 124 formed in the back face 110 of the head. The shaft 104 may be secured to the head 106 in a suitable manner such as by the use of an adhesive or by soldering the distal ends of the legs 118 and 120 to the head. The head 106 also includes integral bosses 126 and 128 providing for concentration of weight at spaced apart points on the head and adjacent to the points of connection of the leg portions 118 and 120 with the head.

As shown in Figure 5, the head 106 may also be provided with a plurality of removable weights 76 disposed in cooperating recesses in the head and retained therein by a removable cover plate 130.

Referring now to Figures 7 and 8, another embodiment of a putter in accordance with the present invention is illustrated and generally designated by the numeral 140. The putter 140 includes a bidirectional head 142 having opposed faces 143 and 144 and a longitudinal profile similar to the heads 12 and 84. The head 142 includes a heel 146 and toe 148 and a bottom surface 150. The head 142 also includes spaced apart bosses 152 and 154 forming weight concentrations adjacent to the points of connection of the head with a shaft 156. The shaft 156 is formed of a continuous piece of tubing similar to the shaft 22 and having adjacent shaft portions 158 and 160 which are respectively provided with opposed legs 162 and 165. The shaft portions 158 and 160 lie contiguous with each other and in a plane which substantially bisects the longitudinal extent of the head 142 and is designated by the numeral 166 in Figure 8. The shaft leg portions 165 and 162 are bent away from the plane 166 and back toward the plane to form the curved leg portions so that the distal ends of the respective leg portions extend into recesses 170 and 172 intersecting the club faces 143 and 144, respectively. The opposite end of the shaft 156 is bent back on itself at 164 to form the adjacent shaft portions 158 and 160.

The putter 140 also includes the desired single continuous shaft member which is provided with the spaced apart legs connected to the head in such a way as to increase the desired zone of contact which will not cause deflection of the club head. The shaft 156 may be secured to the head 142 in a manner similar to the manner described above for securing the shaft 104 to the head 106.



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Moreover, the shaft 156 and the head 142 may be made of the same material as that described for the shaft 22 and the head 12.

A fourth alternate embodiment of the present invention is illustrated in the perspective view of Figure 9. Figure 9 illustrates a golf putter, generally designated by the numeral 180 having a head 182 similar to the head of the embodiment illustrated in Figure 4 and including opposed longitudinal sections 184 and 186 which are suitably joined together by fasteners, not shown, or by a suitable adhesive, for example. The putter 180 is a bidirectional type having opposed ball striking faces 185 and 187, a toe portion 188 and a heel portion 190. The head 182 is connected to an elongated shaft assembly, generally designated by the numeral 192, and characterized by a continuous tubular shaft member 194 which is bent back on itself to form a distal end 196 and adjacent coextensive shaft portions 198 and 200, respectively. The shaft portions 198 and 200 are formed with integral respective leg portions 199 and 201 which extend entirely within cooperating semicylindrical recesses formed in the opposed head sections 184 and 186. The shaft assembly 192 includes a generally cylindrical outer tubular sleeve or sheath tube 202 which extends from the head 182 to a handgrip 204 similar to the handgrip 24. The sheath tube 202 is preferably adapted to extend from a small counterbored recess 205 in the top of the head 182 into a sleeve cap 206 on the lower end of the handgrip 204 so that the putter 180 has the appearance of having a single tubular shaft. However, the handgrip 204 is formed with a resilient cushioned core member 208 similar to the core member 44 which is sleeved over the respective shaft portions 198 and 200 and suitably secured thereto.

The continuous shaft member 194 is formed in a manner similar to the shaft 22 and is preferably of a slightly smaller tube diameter, such as, for example, .187 inch outside diameter stainless steel tubing. Moreover, the angles of the leg portions 199 and 201 with respect to the longitudinal centerline of the shaft assembly 192 are formed to extend in the range of approximately 60° to 70° as opposed to the smaller angles described previously herein for the shaft 22. In this way, the legs 199 and 201 may be enclosed entirely within the head 182. The arrangement of the continuous shaft member 194 with the opposed adjacent shaft portions 198 and 200 enclosed within an outer cylindrical sheath tube having an inside diameter approximately twice the outside diameter of the shaft

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portions provides a somewhat stronger club shaft and gives the overall appearance of a single shaft club. This arrangement is also particularly advantageous for clubs requiring additional shaft strength such as woods and/or irons. Moreover, the putter 180 also retains the stability characteristics of the other embodiments disclosed herein.

It will be understood from the foregoing that the "hand" of the putter illustrated in Figures 1 through 3, and Figures 5 and 6 may be opposite to that shown and that the bidirectional putters illustrated in Figures 4, 7, 8 and 9, may also be adapted to be either right or left handed models only.

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1. A golf putter comprising:

a head including a ball engaging face, a heel portion and a toe portion; and

5 a shaft connected to said head, said shaft comprising two adjacent elongated tubular shaft portions, a handgrip at one end of said shaft portions and a pair of opposed legs at the opposite end of said shaft portions diverging away from each other at said head and connected to said head in the region of said heel and toe portions of said head, respectively, to provide a ball contact zone on said face
10 which reduces the tendency of said head to deflect when striking a golf ball.

2. The golf putter set forth in Claim 1 wherein:

said shaft comprises a continuous elongated tubular member bent back on itself to form said adjacent shaft portions, said shaft portions being bent away from each other to form said legs.

3. The golf putter set forth in Claim 1 wherein:

said legs are integrally formed as part of said shaft portions, respectively.

4. The golf putter set forth in Claim 1 wherein:

said shaft comprises a continuous elongated tubular member bent to form a web interconnecting said legs, and bent to form said legs and said shaft portions, the opposite ends of said shaft being
5 formed to lie adjacent each other at the end of said shaft opposite said head.

5. The golf putter set forth in Claim 1 wherein:

the longitudinal central axis of said shaft forms an angle with a plane contiguous with a bottom surface of said head in the range of 70° to 85°, and the longitudinal central axes of said legs form angles with said central axis of said shaft in the range of
5 approximately 25° to 40° and 50° to 65°, respectively.

6. The golf putter set forth in Claim 1 wherein:

said head includes opposed recesses formed therein for receiving the ends of said legs to secure said head to said shaft.



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7. The golf putter set forth in Claim 1 wherein:
said head includes a separate member including weight portions spaced apart by an interconnecting web, said member being adapted to secure said legs to said head.

8. The golf putter set forth in Claim 7 wherein:
said weight portions comprise cylindrical bosses disposed adjacent said legs at their juncture with said head, respectively.

9. The golf putter set forth in Claim 1 including:
at least one removable weight member disposed in recess means in said head, and means for retaining said weight member in said head.

10. The golf putter set forth in Claim 9 wherein:
said recess means for said removable weight member is disposed between said legs.

11. The golf putter set forth in Claim 10 including:
a plurality of separate recesses in said head between said legs and adapted to receive respective removable weight members therein, and said retaining means includes a cover member adapted to
5 be releasably secured on said head.

12. The golf putter set forth in Claim 1 wherein:
said handgrip includes a member disposed over said one end of said shaft, said handgrip member including an elongated flat surface on the side of said handgrip member adjacent to said toe of
5 said head.

13. The golf putter set forth in Claim 2 wherein:
said legs are bent out of a plane including the longitudinal central axis of said shaft and the longitudinal central axes of said adjacent shaft portions, respectively.

14. The golf putter set forth in Claim 13 wherein:
said legs are bent in opposite directions with respect to said plane and are disposed in recesses formed in opposite faces of said head.



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15. The golf putter set forth in Claim 1 wherein:
said shaft portions are enclosed in an outer sheath tube
between said head and said handgrip.

16. The golf putter set forth in Claim 15 wherein:
said legs are enclosed within said head.

17. A golf putter comprising:
a head including a ball engaging face, a heel portion and a
toe portion;

5 a shaft connected to said head, said shafting comprising a
continuous tubular member bent back on itself to form elongated
substantially adjacent shaft portions, said shaft portions being bent
away from each other to form a pair of opposed legs diverging away
from each other at said head and connected to said head in the region
of said heel and toe portions of said head, respectively, to provide a
10 ball contact zone on said face which reduces the tendency of said
putter to deflect when striking a golf ball;

at least one removable weight member disposed in recess
means in said head, said recess means being disposed between said
legs; and

15 means for releasably retaining said weight member in said
head whereby the weighting of said putter may be selectively varied
without affecting the stability of said putter when striking a golf ball
on said face.

18. The golf putter set forth in Claim 17 including:

5 a plurality of separate recesses in said head between said
legs and adapted to receive respective removable weight members
therein, and said retaining means includes a cover member adapted to
be releasably secured on said head.

19. The golf putter set forth in Claim 18 including:

a handgrip member secured over the distal end of said
shaft and including an elongated planar surface formed thereon and
on the side of said handgrip member adjacent to said toe portion.



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20. A golf club comprising:

a head including a ball striking face, a heel portion, a toe portion, a bottom surface, and recess means in said head for receiving at least one weight member removably disposed in said recess means for selectively varying the weight of said head; and

an elongated shaft including a substantially straight shaft portion and two diverging legs at one end of said shaft portion, said legs being secured to said head at spaced apart points in the vicinity of said heel and said toe portions, respectively, whereby said recess means in said head is disposed at least in part between said legs so that the change in weight of said head effected by said weight member will have minimal effect on the tendency of said club to rotate about the longitudinal axis of said straight shaft portion when striking a ball with said club on said striking face.

21. The golf club set forth in Claim 20 wherein:

said shaft comprises a continuous length of tubing bent back on itself to form the upper distal end of said shaft and said substantially straight shaft portion, the opposite ends of said tubing being bent away from each other to form said legs.

22. The golf club set forth in Claim 21 including:

a cushioned sleeve disposed over said shaft at the distal end thereof and comprising a handgrip for said golf club, and an elongated generally planar surface on said handgrip facing generally toward said toe portion.

23. A golf club comprising:

a head including a ball engaging face, a heel portion and a toe portion; and

a shaft connected to said head, said shaft comprising two elongated shaft portions extending between a handgrip at one end of said shaft portions to respective opposed legs at the opposite ends of said shaft portions, said legs being connected to said head to provide a ball contact zone on said face which reduces the tendency of said head to deflect when striking a golf ball.



-16-

24. The golf club set forth in Claim 23 wherein:

said shaft comprises a continuous elongated tubular member bent approximately 180° to form said shaft portions adjacent to each other, said shaft portions being bent away from each other to form
5 said legs.

25. The golf club set forth in Claim 23 wherein:

said shaft portions are enclosed in an outer sheath tube between said head and said handgrip.

26. The golf club set forth in Claim 25 wherein:

said legs are enclosed within said head.



1

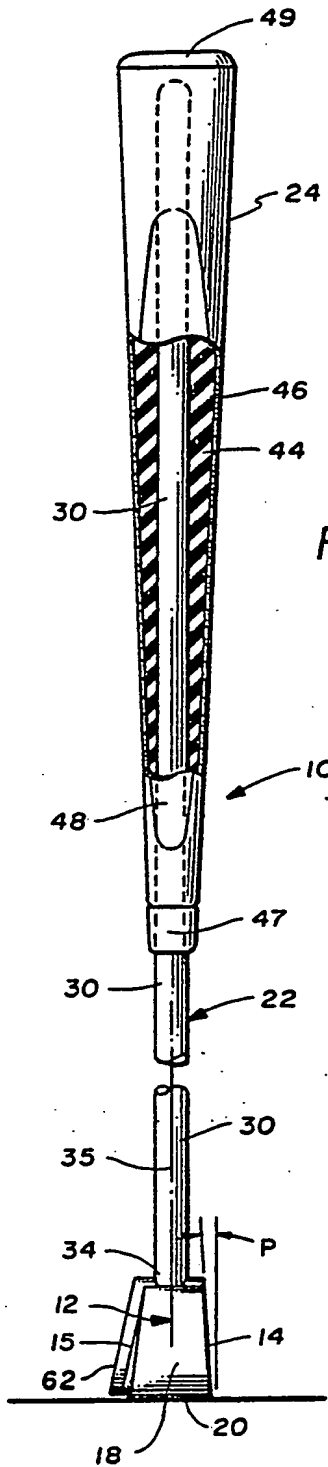


FIG. 2

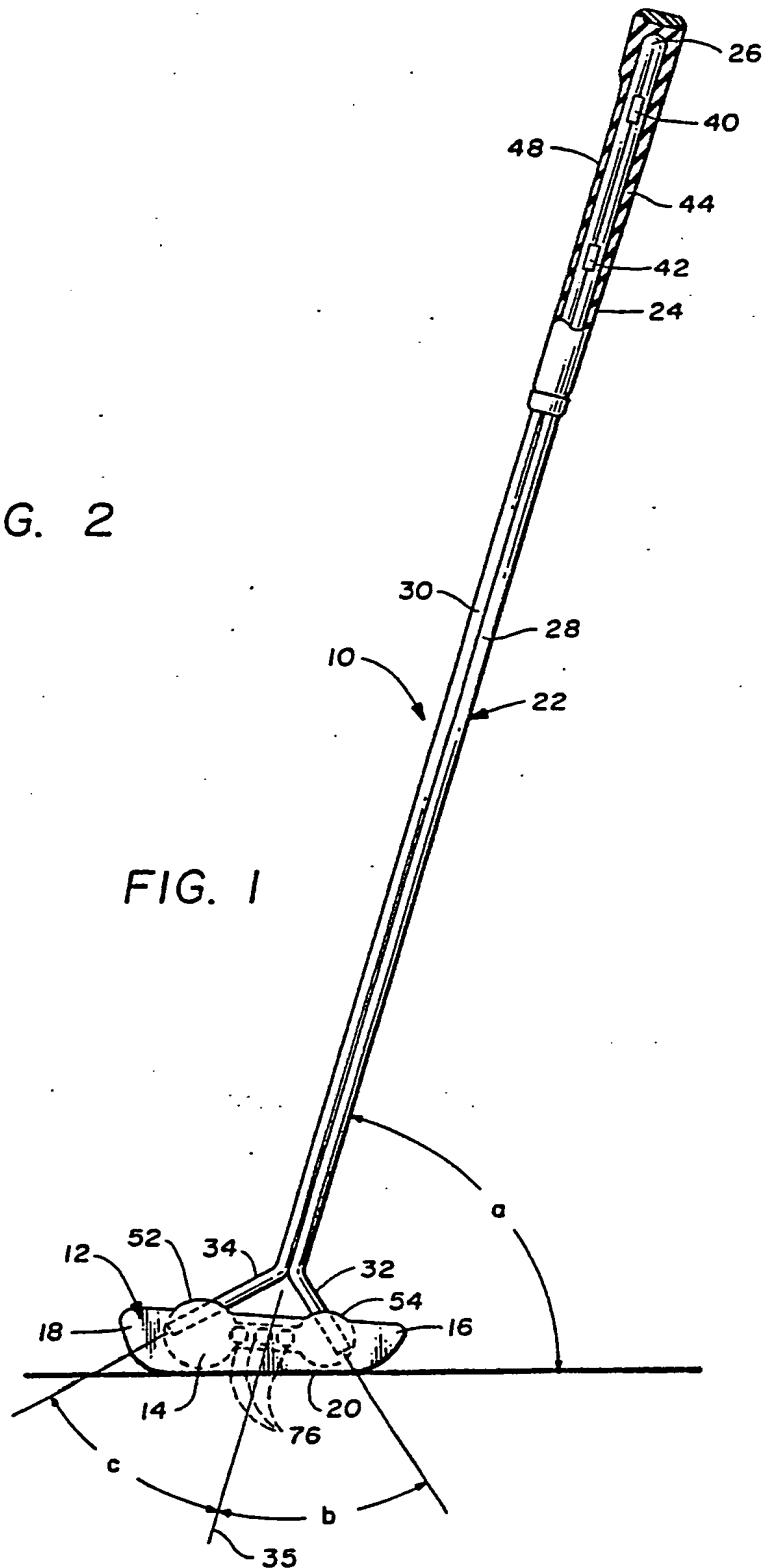


FIG. 1

2

FIG. 3

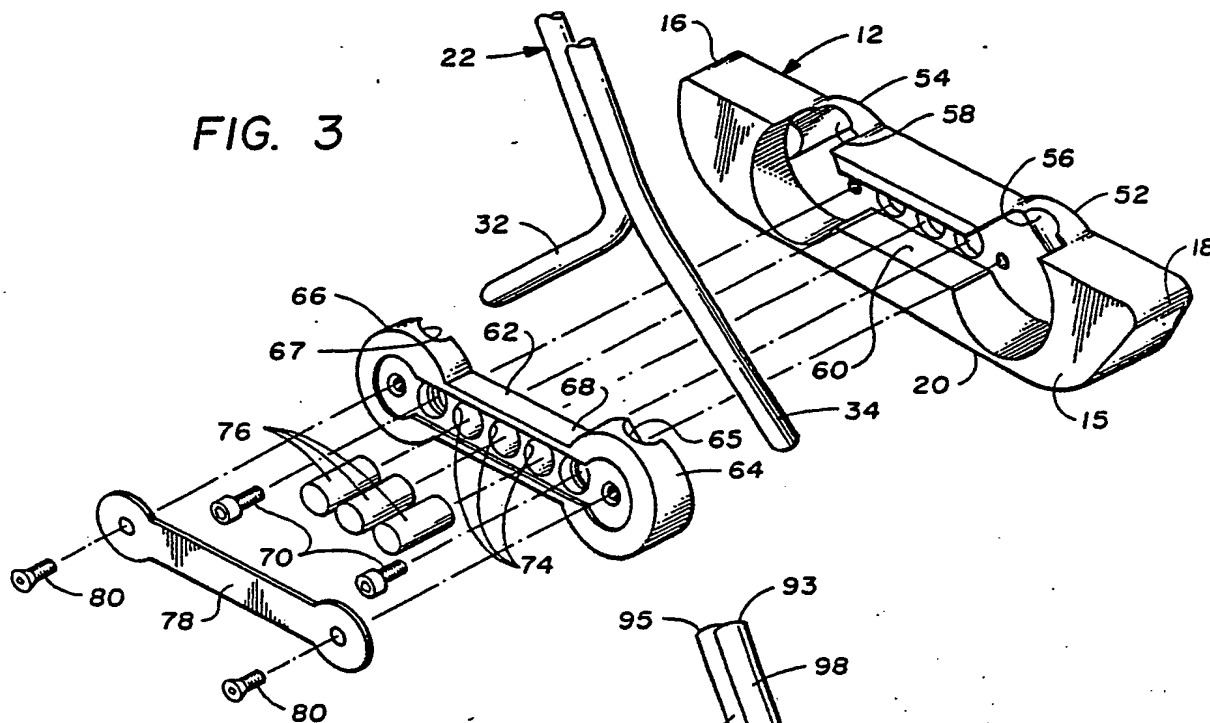
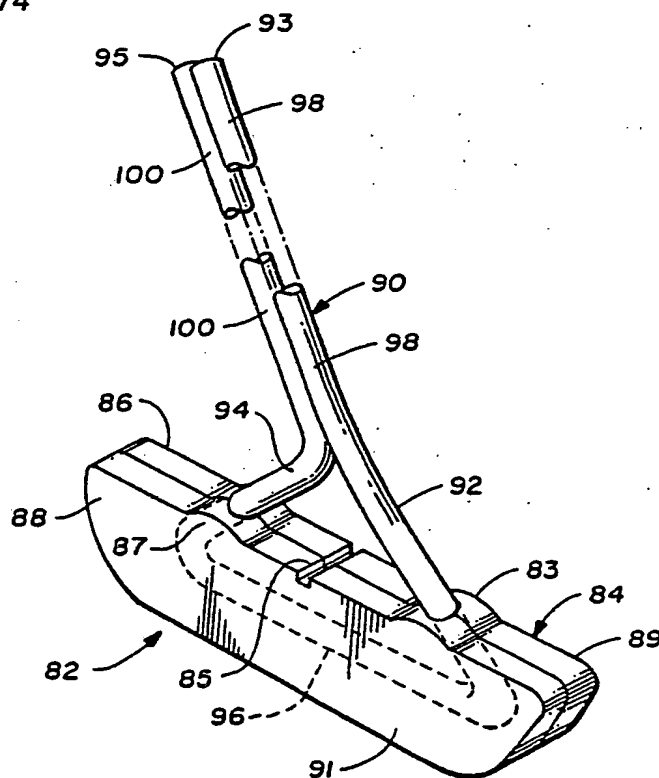


FIG. 4



3

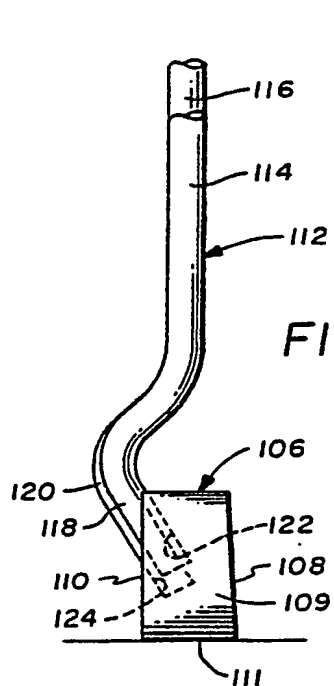


FIG. 6

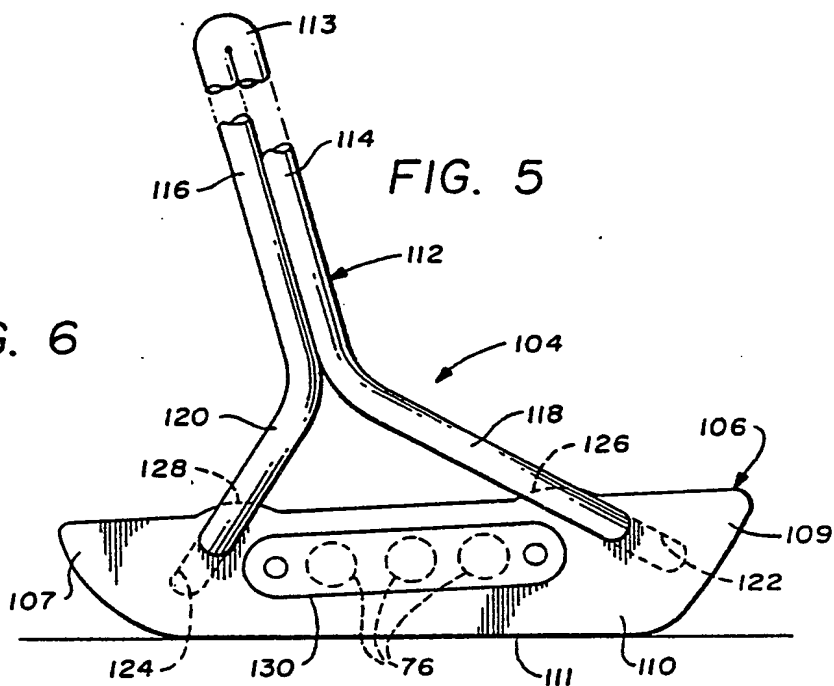


FIG. 5

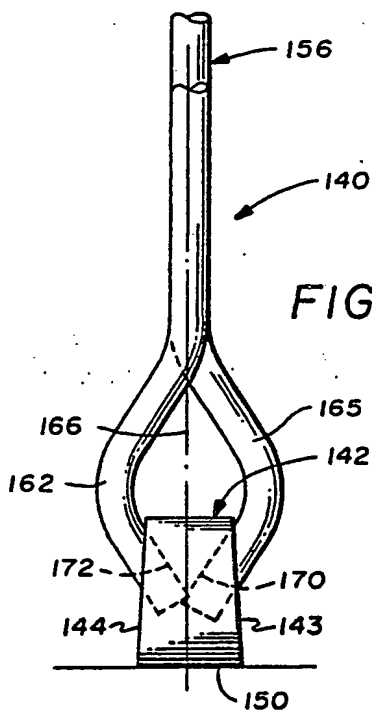


FIG. 8

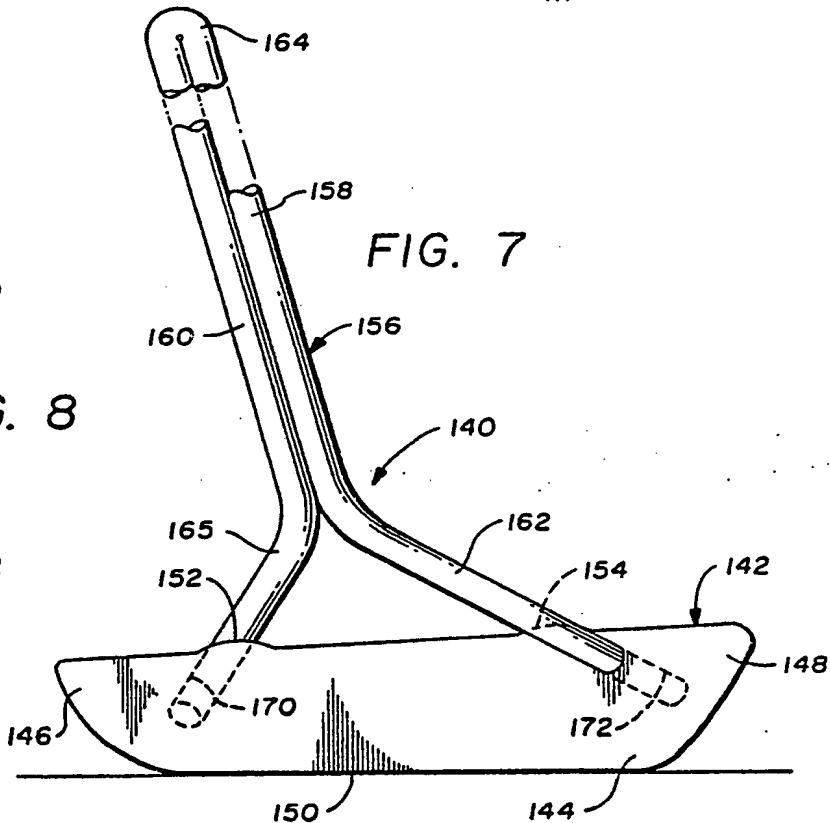
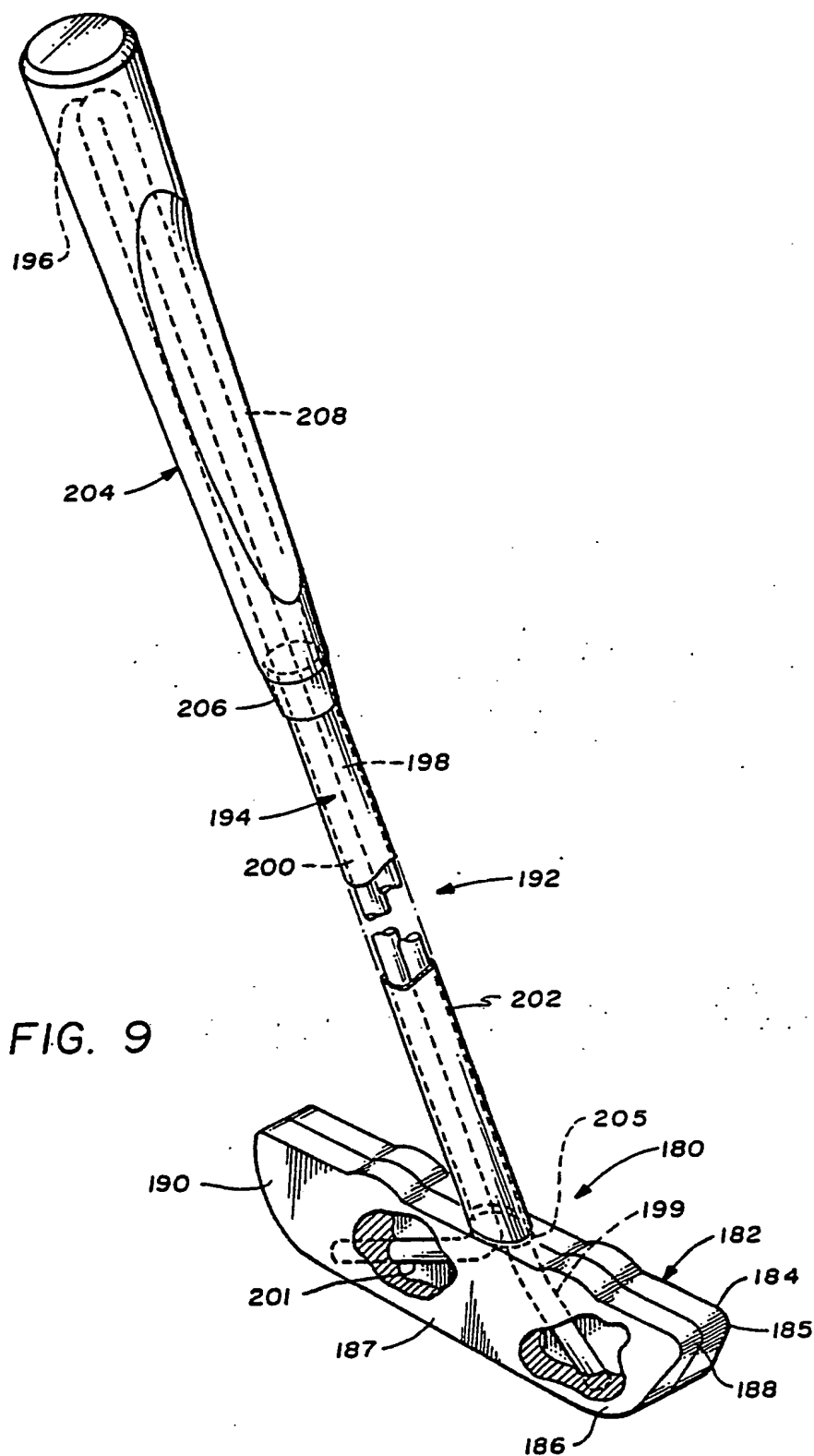


FIG. 7

4



INTERNATIONAL SEARCH REPORT

International Application No **PCT/US84/0388**

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³ According to International Patent Classification (IPC) or to both National Classification and IPC IPC³ A63B 53/10 A63B 53/12																																						
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Minimum Documentation Searched ⁴</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%; text-align: left; border-bottom: 1px solid black;">Classification System</th> <th style="text-align: left; border-bottom: 1px solid black;">Classification Symbols</th> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;"> U.S.A. <div style="display: flex; align-items: center;"> <div style="width: 40px; text-align: center; border-right: 1px solid black; padding-right: 5px;">273</div> <div style="padding-left: 5px;"> 80R, 80A, 80B, 80C, 80.1, 80.2, 80.3, 80.4, 80.5, 80.6 80.7, 80.8, 80.9, 81.2, 81.3, 77R, 164, 167K, 167J, 167H, 168, 171, 169, 81B </div> </div> </td> <td style="padding: 5px;"></td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵</div>			Classification System	Classification Symbols	U.S.A. <div style="display: flex; align-items: center;"> <div style="width: 40px; text-align: center; border-right: 1px solid black; padding-right: 5px;">273</div> <div style="padding-left: 5px;"> 80R, 80A, 80B, 80C, 80.1, 80.2, 80.3, 80.4, 80.5, 80.6 80.7, 80.8, 80.9, 81.2, 81.3, 77R, 164, 167K, 167J, 167H, 168, 171, 169, 81B </div> </div>																																	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; text-align: left; border-bottom: 1px solid black;">Category ⁶</th> <th style="text-align: left; border-bottom: 1px solid black;">Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷</th> <th style="text-align: left; border-bottom: 1px solid black;">Relevant to Claim No. ¹⁸</th> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">A</td> <td style="padding: 5px;">US , A, Design 223,767 06 June 1972 HOUGHTALING</td> <td style="vertical-align: top; padding: 5px;">6</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">X</td> <td style="padding: 5px;">US , A, 687,540 26 November 1901 PALMER</td> <td style="vertical-align: top; padding: 5px;">23</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">X</td> <td style="padding: 5px;">US , A, 1,116,417 10 November 1914 HACKBARTH</td> <td style="vertical-align: top; padding: 5px;">23</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">A</td> <td style="padding: 5px;">US , A, 1,548,063 04 August 1925 SULLIVAN</td> <td style="vertical-align: top; padding: 5px;"></td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">Y</td> <td style="padding: 5px;">US , A, 1,919,221 25 July 1933 JANES</td> <td style="vertical-align: top; padding: 5px;">ALL CLAIMS</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">X</td> <td style="padding: 5px;">US , A, 2,204,974 18 June 1940 STRASSER</td> <td style="vertical-align: top; padding: 5px;">23</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">X</td> <td style="padding: 5px;">US , A, 3,219,348 23 November 1965 DISHNER</td> <td style="vertical-align: top; padding: 5px;">1-3 and 6</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">Y</td> <td style="padding: 5px;">US , A, 3,529,826 22 September 1970 HULYK</td> <td style="vertical-align: top; padding: 5px;">ALL CLAIMS</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">X</td> <td style="padding: 5px;">US , A, 4,147,357 03 April 1979 STROP</td> <td style="vertical-align: top; padding: 5px;">23</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">Y</td> <td style="padding: 5px;">US , A, 4,340,230 20 July 1982 CHURCHWARD</td> <td style="vertical-align: top; padding: 5px;">1-3 and 6</td> </tr> <tr> <td style="vertical-align: top; border-right: 1px solid black; padding: 5px;">A</td> <td style="padding: 5px;">G.B., A, 926,165 15 May 1963 ONIONS</td> <td style="vertical-align: top; padding: 5px;"></td> </tr> </table>			Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸	A	US , A, Design 223,767 06 June 1972 HOUGHTALING	6	X	US , A, 687,540 26 November 1901 PALMER	23	X	US , A, 1,116,417 10 November 1914 HACKBARTH	23	A	US , A, 1,548,063 04 August 1925 SULLIVAN		Y	US , A, 1,919,221 25 July 1933 JANES	ALL CLAIMS	X	US , A, 2,204,974 18 June 1940 STRASSER	23	X	US , A, 3,219,348 23 November 1965 DISHNER	1-3 and 6	Y	US , A, 3,529,826 22 September 1970 HULYK	ALL CLAIMS	X	US , A, 4,147,357 03 April 1979 STROP	23	Y	US , A, 4,340,230 20 July 1982 CHURCHWARD	1-3 and 6	A	G.B., A, 926,165 15 May 1963 ONIONS	
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁵ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"G" document member of the same patent family</p> </div> </div>																																						
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search ¹ <div style="text-align: center;">15 May 1984</div> </td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report ² <div style="text-align: center; font-size: 1.2em;">19 JUN 1984</div> </td> </tr> <tr> <td style="border-bottom: 1px solid black; padding: 5px;"> International Searching Authority ¹ <div style="text-align: center;">United States of America</div> </td> <td style="border-bottom: 1px solid black; padding: 5px;"> Signature of Authorized Officer ²⁰ <div style="text-align: center;"><i>George J. Marko</i></div> </td> </tr> </table>			Date of the Actual Completion of the International Search ¹ <div style="text-align: center;">15 May 1984</div>	Date of Mailing of this International Search Report ² <div style="text-align: center; font-size: 1.2em;">19 JUN 1984</div>	International Searching Authority ¹ <div style="text-align: center;">United States of America</div>	Signature of Authorized Officer ²⁰ <div style="text-align: center;"><i>George J. Marko</i></div>																																
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FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹⁰

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers _____, because they relate to subject matter ¹² not required to be searched by this Authority, namely:

2. ☐ Claim numbers _____, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ¹¹

This International Searching Authority found multiple inventions in this international application as follows:

See PCT/ISA 206

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

See PCT/ISA 206

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

☐ The additional search fees were accompanied by applicant's protest.

☐ No protest accompanied the payment of additional search fees.